6.0   RISK CHARACTERIZATION AND UNCERTAINTIES

Risk characterization will be performed using version no. 1.25.16 of the EcoRisk View program developed by Lakes Environmental Software (2001). EcoRisk View estimates COPC media concentrations, intakes, and risk using U.S. EPA (1999) methods. The ISCST3-modeled air parameters specific to each receptor grid node and the COPC-specific emissions rates for each source will be imported into EcoRisk View to calculate media-specific concentrations and subsequent risk for each receptor at each location identified in the exposure assessment. (If an update to EcoRisk View is released during the risk assessment, it will be used in the risk characterization.) EcoRisk View output will be imported into a Microsoft Access database so that the ESQ values can be sorted and queried to evaluate ESQs resulting from the concurrent operation of multiple emission sources.

Section 6.1 discusses how risk estimates from TOCDF and CAMDS emissions will be derived in the SLERA. Section 6.2 discusses how risk above target levels from TOCDF and CAMDS emissions will be discussed in the SLERA. Section 6.3 presents the uncertainties that will be evaluated. All of the discussions are based on the corresponding sections of the U.S. EPA (1999) protocol and relevant risk characterization procedures from the TOCDF HHRA (Tetra Tech 2002a).

6.1   RISK ESTIMATION

An ecological screening quotient (ESQ) will be generated based on a media concentration or an equal diet dose for each receptor, COPC, and scenario location based on the weighted average COPC emissions from TOCDF and the worst-case COPC emissions from CAMDS. An ESQ will be calculated for each measurement receptor as the quotient of the receptor-specific COPC EEL divided by the receptor-specific TRV:

$$ESQ = \frac{EEL}{TRV}$$

where

ESQ	=	Ecological screening quotient (unitless)
EEL	=	COPC estimated exposure level (mass COPC/mass media [communities] or mass ingested/mass BW-day [guilds])
TRV	=	COPC toxicity reference value (mass COPC/mass media [communities] or mass COPC ingested/mass BW-day [guilds])

For mammals and birds, these ESQs will be based on the "equal" diet scenario. The resulting ESQs will then be compared to a target level of 1.0. For comparison, ESQs based on an exclusive diet dose (pathway- and COPC-specific) will be presented for mammal and bird measurement receptors with equal diet ESQs exceeding the target level of 1.0.

COPCs that exceed the target level will be discussed in the risk description section of the SLERA. For COPCs with ESQs that exceed the target level, the DSHW will consider the need to collect additional information to refine the risk estimates or implement permit requirements.

6.2   RISK DESCRIPTION

The risk description will discuss information about the magnitude and type of risk for each COPC-receptor combination with an ESQ value exceeding the target level.

6.2.1   Magnitude of Risk

The magnitude of individual COPC-receptor ESQ values exceeding the target level will be tabulated for each measurement receptor in each food web, specific to each emission source. The total ESQ values will be summed across emission sources to provide a grand total ESQ to evaluate the assumption that all emission sources are operating concurrently. All ESQ values will be presented in electronic format. EcoRisk View project and output files, and Microsoft Access project files, will be provided in electronic format.

6.2.2   Type of Risk

The first area to be considered when COPCs with excess risk are encountered will be the type of risk that the COPC represents. The discussion will be specific to the assessment endpoint, the measures of effect for the COPC-receptor combination, the pathways contributing the risk, and the emission source. In addition, relevant uncertainties will be identified.

6.3   UNCERTAINTIES

The uncertainty analysis will be performed to identify major uncertainties associated with the ESQ estimates and evaluate the significance of COPCs with ESQ values exceeding the target level.

6.3.1   Major Uncertainties

Major uncertainties associated with the risk estimates will be based on three main parts of the risk assessment: (1) estimates of emission rates, (2) exposure assessment, and (3) toxicity assessment. The major uncertainties and the effects on the ESQ values will be summarized in tabular format.

6.3.2   COPC-Specific Uncertainties

COPCs presenting ESQ values above the target level will be discussed with the risk manager to determine how to evaluate associated uncertainties. Similar to the TOCDF HHRA, uncertainties associated with the following four aspects of the SLERA would be expected to be targeted for evaluation:

- Waste feed assumptions
- Methods and assumptions for estimating emission rates
- Fate and transport modeling methods and assumptions
- Exposure assessment assumptions